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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/599,594	01/04/2007	Hisashi Akiyama	NIHE-41412	1423

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EXAMINER

HOFFA, ANGELA MARIE

ART UNIT	PAPER NUMBER
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3768

NOTIFICATION DATE	DELIVERY MODE
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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/599,594	Applicant(s) AKIYAMA ET AL.	
	Examiner ANGELA M. HOFFA	Art Unit 3768	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1-8 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1-8 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☒ The drawing(s) filed on 03 October 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 24, 2010 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-3 and 5-8 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for adding the oscillation angle information into the image data wherein the image data comprises data streams of intermittent image data arrays and the oscillation angle information is data inserted between the image data arrays during blanking times of the image data arrays, does not reasonably provide enablement for adding the oscillation angle information into the image data wherein the image data comprises data streams of image data arrays and the oscillation angle information is data inserted between the image data arrays of the image data arrays without time-space between the arrays. The specification does not enable any person

skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims.

As admitted by Applicant on page 23, "In advance of acquiring ultrasound echo, blanking time to secure parameter setting time for each circuit block is generated. That is, image data arrays are to be inputted to the three-dimensional image processing means 11 intermittently" and further, "Thus image data including the blanking time added with the oscillation angle information is inputted to the three-dimensional image processing means 11". As such, blanking times created from intermittent image data arrays are a critical element for enablement of the claimed invention.

In Claim 1, the limitation of "wherein the oscillation angle information comprises data inserted between the image data arrays at blanking times of the data streams" is incomplete because the claim requires the data streams to comprise both oscillation information and data arrays. As such, "blanking times of the data streams" does not adequately enable the invention. A suggested amendment is "a three-dimensional image processor configured to receive data streams comprising intermittent image data arrays with corresponding oscillation angle information inserted at blanking times between the image data arrays, the three-dimensional image processor further configured to form a three-dimensional image based on the data streams".

Similar amendments are suggested for all independent claims to expedite allowance.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

Art Unit: 3768

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-3 and 5-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 1, “an ultrasonic receiving means for...converting the ultrasonic beam to visible image data” is confusing because “visible image data” is not further used in the claim. The term “image data array” is used instead. To maintain antecedent basis, the suggested amendment is “an image data array”.

Regarding Claims 2 and 5, it is unclear if the “image data arrays” are data streams in the context of the claim language. It is suggested to specify that they are data streams, similar to Claim 1.

Regarding Claim 7, the limitation of “said data” is confusing because there are multiple data types defined in the parent claim. Further, it is not clear how the scope of Claim 7 is different from that of the parent claim.

Regarding Claim 8, the limitation of “said data” is confusing because there are multiple data types defined in the parent claim.

6. Claims 1-3 and 5-8 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: Intermittently acquiring the image data array to generate blanking times and inserting the oscillation data into the respective blanking time. See scope of enablement rejection above.

7. The following is a quotation of the sixth paragraph of 35 U.S.C. 112:

An element in a claim for a combination may be expressed as a means or step for performing a specified function without the recital of structure, material, or acts in support thereof, and such claim shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof.

8. Regarding Claims 1-8, Applicant is requested to clarify on the record whether or not 112, 6th means plus function language is being invoked.

For the purposes of examination, Claims 1-8 do NOT meet the provisions of 112, 6th paragraph.

If applicant wishes to have the claim limitation treated under 35 U.S.C. 112, sixth paragraph, applicant is required to amend the claim so that the phrase “means for” or “step for” is clearly **not** modified by sufficient structure, material, or acts for performing the claimed function.

If applicant does **not** wish to have the claim limitation treated under 35 U.S.C. 112, sixth paragraph, applicant is required to amend the claim so that it will clearly not be a means (or step) plus function limitation (e.g., deleting the phrase “means for” or “step for”).

Suggested amendments to eliminate the "means for" language include, for example, “an oscillation angle ~~detection means for detecting~~ detector configured to detect...” The same type of correction could be applied for the other claimed components (i.e. an ultrasonic transmitter, an ultrasonic receiver, a three-dimensional image processor, an image display, etc).

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claim 4 is rejected under 35 U.S.C. 102(b) as being anticipated by US 5,152,294 to Mochizuki.

Regarding Claim 4, Mochizuki discloses an ultasonographic equipment comprising:

an ultrasonic transducer unit which two-dimensionally scans a fault plane of a test body, and is driven to be oscillated in the direction orthogonal to a scanned face of the two-dimensional scanning (array transducer 30, fig. 8; motor 40, fig. 2);

a scanning convertor configured to record a receiving signal obtained by the two-dimensional scanning by the ultrasonic transducer unit in a frame memory to create two-dimensional image data, reading out the two-dimensional image data, and outputting the two-dimensional image data (106, 108, 110, fig. 8);

a delay unit configured to delay position information in the oscillation direction of the ultrasonic transducer unit by a processing time of the scanning convertor (controller 102, fig. 8; col. 7, lines 8-19); and

a three-dimensional image processor configured to create a three-dimensional image from the two-dimensional image data of a plurality of frames sequentially

outputted from the scanning convertor based on the position information in the oscillation direction delayed by the delay unit (110, fig. 8);

wherein the delay unit is further configured to output the delayed position information to the three-dimensional image processor, thereby synchronizing a timing of the outputted image data with the delayed position information (display 112, fig. 8).

Response to Arguments

11. Applicant's arguments, see pages 8-9, filed March 24, 2010, with respect to the 101 and 112 rejections of claims 1-8 have been fully considered and are persuasive. The previous 101 and 112 rejections of claims 1-8 regarding the blanking times have been withdrawn. New 112 rejections have been made in light of the claim amendments and corrected interpretation of the blanking times feature. The Examiner appreciates Applicant's clarification of the invention in the response.

12. Applicant's arguments filed March 24, 2010 regarding Claim 4 have been fully considered but they are not persuasive. Regarding Claim 4, Applicant argues that the limitation of outputting delayed position information to a three-dimensional processing means is not taught by Mochizuki. In Fig. 8, the controller 102 can be considered the delay means and the three-dimensional image processor 110 can be considered the three-dimensional processing means. The controller passes information to the memory 108 and then to the processor 110. Therefore, the controller is passing information to the processor, albeit indirectly. Further, the delayed position information is synchronized with the image data via the swing mechanism, switch, and angle detector,

Art Unit: 3768

controlled by the controller, as in Fig. 8. Therefore, giving the claims their broadest reasonable interpretation, the reference meets the claimed limitation.

Allowable Subject Matter

13. Claims 1-3 and 5-8 would be allowable if rewritten to overcome the above 112 rejections and delete all "means for" language.

The following is a statement of reasons for the indication of allowable subject matter: The prior art does not teach or suggest the inclusion of transducer angle information inserted into the blanking times of intermittent ultrasound image array data. Rather, exemplary prior art US 5,152,294 to Mochizuki discloses a three-dimensional memory where each image data location corresponds to a transducer angle position. Mochizuki discloses a data stream in which the image data is approximated to the nearest position location on the recorded array. The invention of Applicant is more precise in recording position data than that of the prior art and compensates for influences from non-constant velocity of the transducer array.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANGELA M. HOFFA whose telephone number is (571)270-7408. The examiner can normally be reached on Monday - Friday, 10:00 am - 6:30 pm.

Art Unit: 3768

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. M. H./
Examiner, Art Unit 3768

/LONG V. LE/
Supervisory Patent Examiner, Art Unit 3768